



MONTHLY AIR QUALITY REPORT FOR MARCH 2007

AOI COLOR SCALE

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

Calendar of maximum AQI values & their corresponding color for March 2007*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

1 (day of month)	O3	CO
	PM10	PM2.5

SUN			MON			TUES			WED			THU			FRI			SAT		
												1	36	22	2	36	25	3	41	11
													55	39		60	46		58	21
4	42	11	5	45	17	6	45	26	7	38	31	8	39	17	9	45	27	10	48	28
	55	43		56	27		74	52		80	52		60	31		69	50		54	49
11	45	19	12	48	22	13	48	27	14	66	19	15	77	28	16	48	26	17	66	25
	52	37		68	52		86	62		74	49		85	63		90	64		66	79
18	44	19	19	38	13	20	40	15	21	34	13	22	29	10	23	36	11	24	41	10
	45	39		71	38		76	50		69	30		32	10		12	21		14	24
25	45	11	26	48	17	27	42	14	28	38	06	29	40	08	30	42	08	31	47	15
	21	33		41	45		137	41		59	23		53	22		38	14		43	35

Calendar of High Pollution Advisories and Health Watches issued during March 2007

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

LEGEND

HIGH POLLUTION ADVISORIES

A = PM-10 High Pollution Advisory
B = PM-2.5 High Pollution Advisory
C = Ozone High Pollution Advisory

HEALTH WATCHES

D = PM-10 Health Watch
E = PM-2.5 Health Watch
F = Ozone Health Watch

Calendar of Meteorological Conditions observed in Metro Phoenix during March 2007

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

LEGEND

ELECTROMETEORS

A = Thunderstorm

HYDROMETEORS

B = Rain/Drizzle/Hail/Snow
C = Fog

LITHOMETEORS

D = Blowing Dust
E = Haze (vsby <10SM)
F = Smoke

Exceedance days during MAR 2007-

Total= 1	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
	03/27	137	PM-10	West Forty Third

Health Watches issued during MAR 2007-

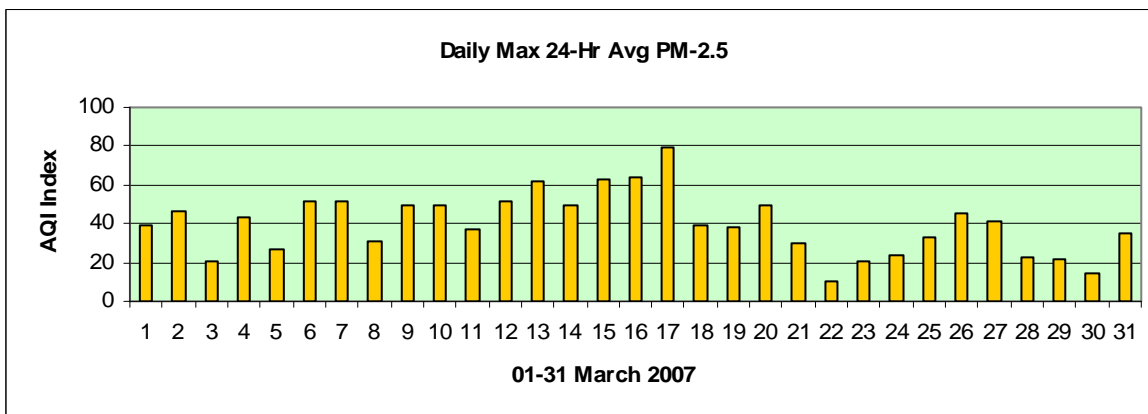
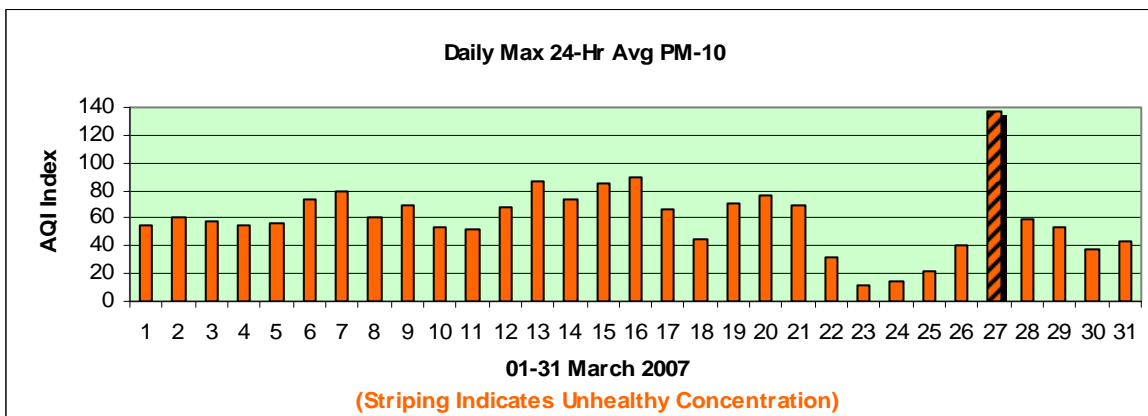
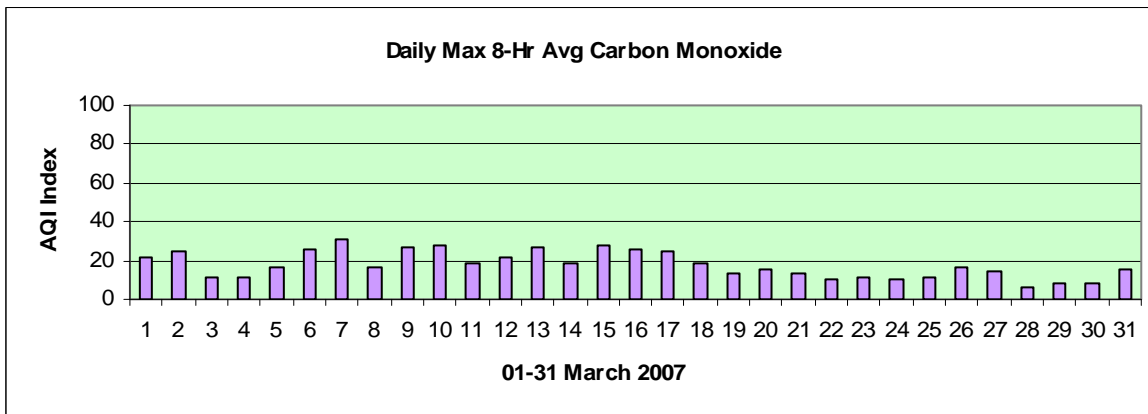
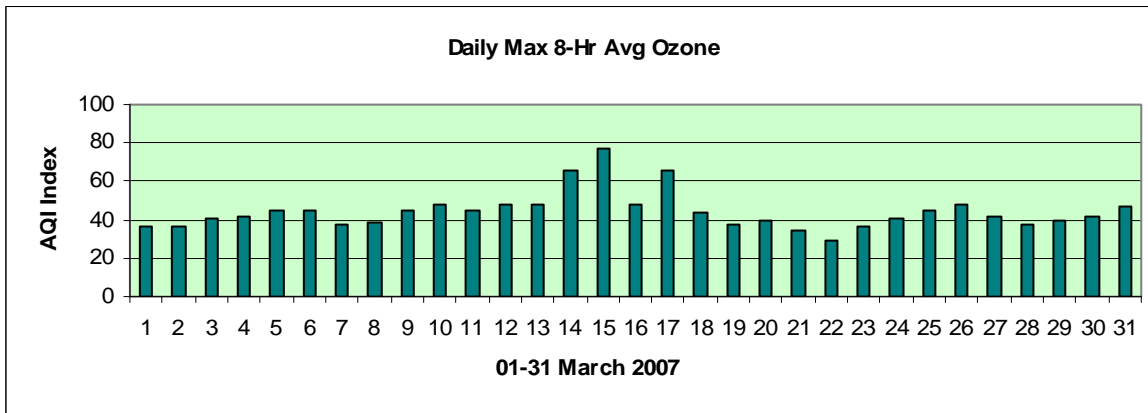
Total= 1	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
	03/27	137	PM-10	West Forty Third

High Pollution Advisories issued during MAR 2007-

Total= 0	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
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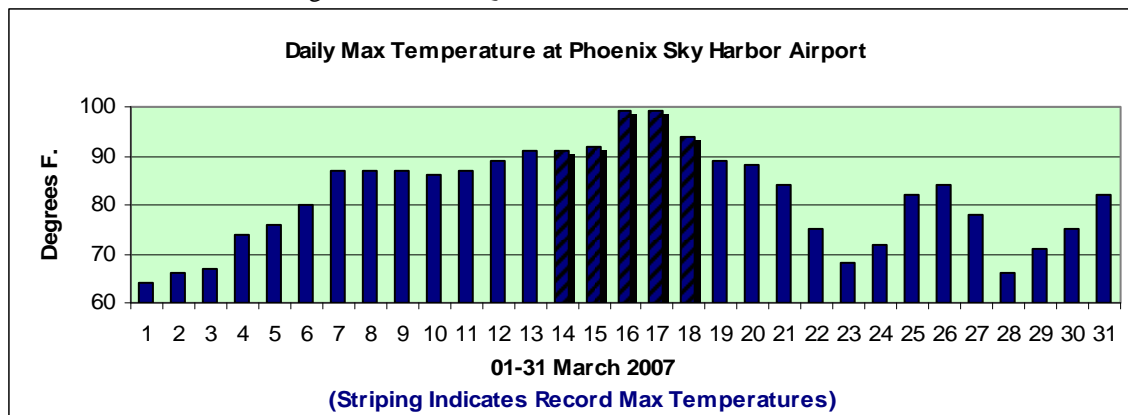
Concentration Recap:

Days in the Good category:	8
Days in the Moderate category:	22
Days in the Unhealthy for Sensitive Groups category:	1
Days in the Unhealthy category:	<u>0</u>
Total Forecast Days:	31



Narrative:

A wide variety of weather and air quality conditions were experienced in the Phoenix forecast area during March – usually the month of transition from stagnation and wind-based particle pollution (PM-10, PM-2.5) concerns toward solar and chemical precursor-generated ozone (O3) pollution concerns. Sometime these concerns even overlap as detailed below. A strong ridge aloft built over the state during the first week of the month and, as can be seen in the chart below, daytime temperatures rose from the lower 60's on the 1st into the 80's by the 6th. The air mass was extremely dry during this period with Valley dew points as low as -22 deg F on the 3rd. This led to rapid overnight cooling, the formation of moderate to strong morning surface-based radiation inversions (as much as 8 deg C on the 7th), and an increasingly stagnant air mass. Coarse particle (PM-10) concentrations responded by rising into the mid to upper moderate range of the Air Quality Index on the 6th and 7th and fine particle (PM-2.5) levels rose into the low-moderate range of the AQI. The view was also impacted; visibilities of less than 10 miles were reported during six of the first nine days of the month. On the 12th another upward trend in daytime temperatures began that culminated in record heat from the 14th through the 18th; the 100-degree mark was nearly reached on two days. Despite mixing depths between 8500 and 9000' and good to very good dispersion, PM-10 levels reached the upper-moderate range of the AQI on the 15th and 16th. On those two days the highest hourly PM-10 concentrations at the West Forty Third site reached 341ug/m3 and 510ug/m3, respectively. Also, during this brief heat wave, ozone production rose dramatically with levels reaching the mid-moderate range of the AQI on the 15th. On top of that, the highest PM-2.5 AQI of the month occurred on the 17th.



By the 18th the ridge aloft had begun to weaken as a series of weak disturbances passed by to the north and introduced near-zonal flow over the western U.S. A major weather change occurred from the 21st thru the 24th with the approach and slow passage of a nearly cut-off and quasi-stationary closed low height center and associated trough and surface cold front. It brought periods of rainfall to the local forecast area – heaviest and accompanied by thunderstorms on the 22nd and 23rd. As a result, all air pollutant concentrations were in the good range of the AQI from the 22nd thru the 26th. On the 27th an intense but moisture-starved mid-latitude upper low and trough brought a regional wind and dust event to the desert Southwest. In the Phoenix metro area proper, wind gusts up to 45 mph occurred along with periods of dense blowing dust that lowered visibilities to as low as four miles at times. At 1700 hrs the hourly PM-10 concentration at the West Forty Third site reached 794.4ug/m3; the 24-hour average was over 228ug/m3 with an AQI equivalent of 137 and a serious exceedance of the standard. This was an interesting case from a local forecast perspective in that it was assumed that the soil stabilization provided by the preceding rainfall event would have prevented such large amounts of dirt from becoming airborne. Thus, the PM-10 Health Watch that was issued for the 27th fell far short of the actual severity of the event. -Reith